PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Conveyor Device in or for Machines for the Production, Filling, and Closing of Packaging Containers

We, FR. HESSER. MASCHINENFABRIK-AKTIENGESELLSCHAFT, a Company organised under the laws of the Federal Republic of Germany, of 99, Nauheimerstrasse, Stuttgart-Bad Cannstatt, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is concerned with a device in or for machines for the production, filling and closing of packaging containers, particularly packaging bags, for transferring open containers, which are formed on folding mandrels in the machine, from the latter into the conveyor receptacles of a conveyor device associated with the filling and closing devices of the machine.

In known machines of this type, the bags are folded around a mandrel rotating in a horizontal plane, are pushed off from the latter, erected, and placed in conveyor receptacles which transfer them to the filling device and the closing tools of the machine. A conveyor member, which swings in cycles between a horizontal outer position and a vertical outer position, erects and transfers the bags. The bags are first pushed on to this conveyor member in the horizontal position to lie with their bottoms outwards, and this conveyor member then swings into the vertical position, the bag concerned thus being erected and simultaneously placed for filling and closing in a conveyor receptacle of the conveyor device, which is open at the front side.

This device, however, operates without breakdown only within comparatively low limits of output. When the output is increased experience has shown that the bags undergo a deformation by the air resistance in their transfer, this substantially impairing the filling of these bags and even making it impossible.

To obviate this, in accordance with the present invention, we provide, in or for machines for the production, filling and closing of packaging containers, particularly packaging bags, a device for transferring the open containers, which are produced on folding mandrels, from the latter into the conveyor receptacles of a conveyor device associated with the filling and closing devices of the machine, said device comprising an intermittently rotatable conveyor wheel having a plurality of receptacles, open at both ends, for the containers whereby, when the conveyor wheel is rotated intermittently, each receptacle is brought first into axial alignment with one of the folding mandrels of the machine, to receive a container pushed off from the latter, and, when the conveyor wheel has been rotated through one or more further steps, then into alignment with one of the conveyor receptacles of the conveyor device or the filling and closing devices of the machine, to transfer the container carried thereby into said conveyor receptacle.

In a preferred embodiment of the invention in or for a machine in which the folding mandrel wheel and the conveyor device are mounted with their axes of rotation parallel to each other, the conveyor wheel carrying said receptacles is mounted between the folding mandrel wheel and the conveyor device for rotation about an axis, which is inclined at an angle of 45°, and the receptacles are fastened to the conveyor wheel at an angle of 45° to the axis of rotation of the latter, so that, during a pause in rotation of the conveyor wheel, one receptacle is located in axial alignment with the folding mandrel of the folding mandrel wheel which is in the transfer position, and a further receptacle is simultaneously located in axial alignment with one of the conveyor receptacles of the conveyor device.

Further features and advantages of the present invention will be apparent from the pre-

ferred example of a device constructed in accordance with the invention described with reference to the accompanying diagrammatic drawings, in which:—

Figures 1 and 2 are respectively a cross section through and a plan view of the conveyor wheel and part of a mandrel wheel and a closing wheel of a machine for producing, filling and closing packaging containers.

The machine illustrated includes a conveyor wheel 4 having, for example, four receptacles 5 which are open at both ends. The axis of this intermittently rotatable conveyor wheel 4 is inclined at an angle of 45° to the horizontal longitudinal axis of the folding mandrel 1 of a mandrel wheel 21 which is located directly at the transfer station and at an angle of 45° to the vertical longitudinal axis of the conveyor receptacle 2 of a conveyor device 3 which is positioned at the transfer station. The conveyor wheel 4 is fastened to a shaft 12 which is rotatably mounted in a fixed bearing 11 and is intermittently driven in synchronism with the mandrel wheel 21 and the conveyor device 3 through a spindle 15 and bevel wheels 13, 14.

The receptacles 5 of the conveyor wheel 4 are mounted at an inclination of 45° to the axis of rotation of the conveyor wheel so that, during a pause in rotation of the wheel, one receptacle 5 is positioned with the longitudinal axis thereof in alignment with the longitudinal axis of a folding mandrel 1, whilst the receptacle 5, which is situated diametrically opposite said receptacle, is positioned in alignment with a conveyor receptacle 2 of the conveyor device 3.

When the receptacles 5 of the conveyor wheel 4 are in this position, a bag B is pushed off the folding mandrel 1, which is at the transfer station, into the opposite receptacle 5, standing ready, by means of a pusher 6 so that the bottom of the bag B rests on an arcuate rail 7 which runs beneath the path of movement of the receptacles 5 to a point located just before the transfer station of the conveyor device 3. A further bag B, which, while the conveyor wheel 4 has rotated through two feed steps, has been erected from the horizontal into the vertical position and brought into alignment with one of the conveyor receptacles 2 of the conveyor device 3, is simultaneously transferred out of its receptacle 5 through a guideway 9 into the conveyor receptacle 2 by a blast of air discharged from a nozzle 8. This bag B comes to rest on a base rail 10 and is then fed to the filling and closing devices of the machine.

Of course, it is not absolutely essential that the axis of rotation of the conveyor wheel 4 be inclined at an angle of 45° since it is within the scope of the present invention for this axis to be inclined at other angles and even be parallel to the longitudinal axis of the folding mandrel 1 which is situated at the transfer station. In such cases the receptacles 5 merely have to be mounted on the conveyor wheel 4 in a suitable arrangement, and the guideway 9 has to be correspondingly arcuate-shaped.

It is also possible to make the receptacles 5 pivotable on the conveyor wheel 4 and to provide for adjustment thereof by means of a fixed cam rail or the like to bring the same into the required horizontal or vertical position. Moreover, the receptacles 5 on the conveyor wheel 4 may be also rotatable about their longitudinal axis and so operated, if desired, as to rotate the bags B carried thereby through 90° about their longitudinal axes and insert them into the conveyor receptacles 2 at the sides thereof.

Not only bags, but also other containers such, for example, as cardboard packages with or without inner bags may, of course, be handled by a device constructed in accordance with the invention.

WHAT WE CLAIM IS:—

1. In or for machines for the production, filling, and closing of packaging containers, particularly packaging bags, a device for transferring the open containers, which are produced on folding mandrels, from the latter into the conveyor receptacles of a conveyor device associated with the filling and closing devices of the machine, said device comprising an intermittently rotatable conveyor wheel having a plurality of receptacles, open at both ends, for the containers, whereby, when the conveyor wheel is rotated intermittently, each receptacle is brought first into axial alignment with one of the folding mandrels of the machine, to receive a container pushed off from the latter, and, when the conveyor wheel has been rotated through one or more further steps, then into alignment with one of the conveyor receptacles of the conveyor device of the filling and closing devices of the machine, to transfer the container carried thereby into said conveyor receptacle.

2. In or for a machine in which the folding mandrel wheel and conveyor device are arranged with their axes of rotation parallel to each other, a device according to Claim 1, in which the conveyor wheel carrying said receptacles is mounted between the folding mandrel wheel and the conveyor device for rotation about an axis, which is inclined at an angle of 45°, and the receptacles are fastened to the conveyor wheel at an angle of 45° to the axis of rotation of the latter, so that, during a pause in rotation of the conveyor wheel, one receptacle is located in axial alignment with the folding mandrel of the folding mandrel wheel which is in the transfer position, and a further receptacle is simultaneously located in axial alignment with one of the conveyor receptacles of the conveyor device.

3. A device according to Claim 1, in which the receptacles are mounted on the conveyor

wheel for pivoting transversely to their respective longitudinal axes.

4. A device according to any of Claims 1 to 3, in which the receptacles are mounted on the conveyor wheel for rotation about their respective longitudinal axes.

5. A device according to any of Claims 1 to 4, in which a guideway for the containers is arranged between the conveyor receptacle of the conveyor device, which is at the transfer station and the receptacle of the conveyor wheel, which is also at the transfer station.

6. A device substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

E. N. LEWIS & TAYLOR,
Chartered Patent Agents,
144, New Walk, Leicester,
Agents for the Applicants.

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1 SHEET

COMPLETE SPECIFICATION

Fig. 1.

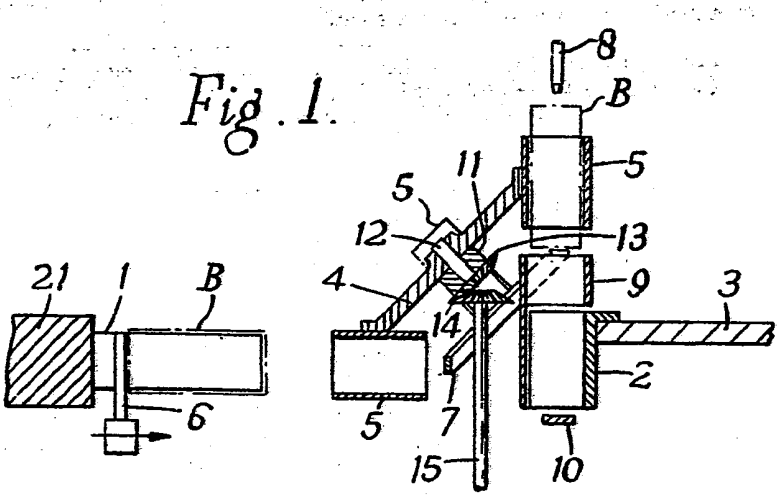

Fig. 2.